

Discussion

This invention relates to a novel faujasite-type zeolite having unique properties and methods of use. Specifically, the claimed zeolite differs from faujasites of the prior art in silica to alumina ratio, in combination with surface area and micropore volume.

Applicant has amended claims 5-7 to correct an error in which the superscript “2” was used instead of “3” in the units of volume. This change is purely clerical in nature.

Claims 17-19 stand objected to as being improper dependent claims. As amended, the claims now recite the material claimed as being “obtained” from the process of Claim 10. Applicants respectfully submit that, as amended, Claims 17-19 are now in proper dependent form as a product-by-process claim and methods dependent thereon.

Claims 1-9 stand rejected under 35 U.S.C. §102(b) as being anticipated by Patent No. WO95/15208 to Amiridis et al. Applicants respectfully traverse this rejection for the reasons stated below.

Amiridis teaches a zeolite having a total surface area of 845 m²/gm. The reference also describes surface areas of less than “about” 875 m²/gm, 880 m²/gm, and 900 m²/gm in other zeolite materials, but the complete characterization of these other zeolites is not disclosed by the reference. From this one characteristic, namely, surface area, the Examiner has inferred that the zeolite of the present invention is identical to that of

Amiridis et al. Further, without citation to authority or art, the rejection states that “micropore volume and surface area are integrally related, and the reference discloses a surface area that is the same as the claimed surface area. For these reasons, the claimed micropore volume is *assumed* to be inherent to the zeolite of reference.” Applicants respectfully dispute the assumption made in the rejection.

As is well known in the art, total surface area is a sum of micropore and mesopore surface areas, and the ratio between micropore and mesopore surface area (and, perforce, volume) may be varied substantially by methods of manufacture of the zeolite in question. Without some basis in the art, a mere assumption of a constant ratio of micropore to mesopore volume may not be the basis for an assumption that two materials are identical, particularly when, despite a *partial* overlap of a range of characteristics, one material demonstrably exceeds another at the opposite end of the claimed range. Such is the case here.

For instance, the surface area of the zeolite of the present invention is from “at *least* about 875 m²/gm” as in Claim 1, to “about 900 m²/gm to about 1030 m²/gm” as in Claim 7. This contrasts sharply with the Amiridis zeolite which is disclosed in Table 1 as having a surface area of 845 m²/gm. When dealing with zeolites such as those here, the difference between 845 m²/gm and more than about 875 m²/gm is significant, and no person of ordinary skill in the art would confuse two zeolites which differ in surface area by more than 25 m²/gm, nor would that person consider 845 m²/gm to be “at least about 875 m²/gm.” In fact, it is well established that claims to zeolites reciting only slight

(<25m²/gm) differences in surface area per unit mass have been determined to be patentably distinct. For these reasons, applicants respectfully request reconsideration of the rejection of Claims 1-9.

Claims 1-6 and 8-19 stand rejected under 35 U.S.C. §103(a) in view of Patent No. 5,242,677 to Cooper et al. Applicants respectfully traverse this rejection for the reasons stated below.

The invention of Cooper et al. results in a zeolite having a SiO₂/Al₂O₃ ratio of 40-70, and a surface area of 700-900 m²/gm. While these ranges may *seem* to overlap the claimed ranges of the present invention, it is instructive to note that the range of the present invention for surface area is claimed in Claim 7 to extend from “about 900 to about 1030 m²/g” – substantially beyond the range of Cooper et al. The same is true for silica to alumina ratio, where Cooper discloses a range of 40-70, while, for example, Claim 7 recites a range of 16-1000. This, taken with the lack of *actual* overlap in surface area, leads one of ordinary skill in the art to the inescapable conclusion that the zeolite of Cooper et al. is distinct from that of the present invention. Indeed, Cooper et al. teach away from the substantially larger ranges of the present invention and failed to produce their claimed product when working outside quite narrow compositional ranges.

In addition, as discussed above, one of ordinary skill in the art would not assume the micropore volume of a zeolite without explicit measurement, and the micropore volume may vary substantially in zeolites of similar silica to alumina ratio, pore size, etc. Thus,

Claims 5 and 6 would not be rendered obvious, simply because of similar other properties, and particularly, not where there is a lack of overlap in certain key properties as shown above.

Applicants note that Claims 8 and 9 are rejected, but are not separately discussed in the Official Action. As described above, the zeolite of the present invention is distinct from those of the prior art, and thus applicants submit that methods of its use in Claims 8 and 9 are similarly patentable.

In view of the foregoing, applicants respectfully request a notice of allowance of their claims.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lawrence A. Husick", written over the printed name.

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Dated: September 18, 2005